



PATENT APPLICATION

IN THE U.S. PATENT AND TRADEMARK OFFICE

April 20, 2011

Applicants: Jakob MAIER, Jr. et al

For: RETAINING DEVICE FOR TEAT CUPS AND ACTUATOR  
FOR INCITING A MOVEMENT OF A TEAT CUP CLUSTER

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Commissioner for Patents  
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**APPELLANTS' BRIEF ON APPEAL**

Sir:

This is an appeal from the decision of the Examiner dated October 25, 2010, finally rejecting Claims 80-112 and 124-130.

**REAL PARTY IN INTEREST**

Jakob Maier, Jr. and Wilfried Hatzack are the owners of the present application and the real party in interest.

**RELATED APPEALS AND INTERFERENCES**

There are no related appeals and interferences to the present application.

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STATUS OF CLAIMS 01 FC:2402

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Claims 80-138 are pending in the present application. Claims 1-79 have been canceled. Claims 80-112 and 124-130 have been finally rejected and are the claims under

consideration on appeal. Claims 113-123 and 131-138 have been withdrawn from consideration.

#### STATUS OF AMENDMENTS

An Amendment After Final Rejection has not been filed.

#### SUMMARY OF CLAIMED SUBJECT MATTER

Appellants' invention, as defined by independent Claim 80, is directed to a retaining device (numeral 200 in Figure 2a) for the manual removal of teat cups (numeral 210 in Figure 2a) with a fastening device (numeral 201 in Figure 2a) for fixing the retaining device at a predetermined milking position (specification page 12, lines 20-22), the retaining device being formed to hold each of a multiple number of teat cups in a fixed position relative to the others during a first operational phase, and to allow manual access to each of the retained teat cups in such a way that, during a second operational phase, each teat cup is manually moveable relative to the retaining device and at least one additional teat cup in more than one direction (specification page 12, lines 22-25 and specification page 13, line 1), wherein the retaining device furthermore has a stimulation mechanism (numeral 340 in Figure 3a) that is formed to act mechanically on at least one milk hose (numeral 217 in Figure 2a) that connects a teat cup to the retaining device during the second operational phase, for inciting a rhythmic movement to the teat cup while it is maintained in contact with and attached to a cow's teat (specification page 52, lines 15-24 and specification page 55, lines 20-24).

#### GROUND OF REJECTION TO BE REVIEWED ON APPEAL

The first ground of rejection to be reviewed on appeal is whether Claims 80-82, 90-94, 98-112 and 124-130 are unpatentable under 35 USC 103(a) over Van der Lingen et al in view of Maier, Jr. The second ground of rejection for review on appeal is whether Claims 83-89, 95-97 and 103 are

unpatentable over Van der Lingen et al and Maier, Jr. and further in view of Nordegren et al.

#### ARGUMENT

The invention under appeal is directed to a retaining device for the manual removal of teat cups used in a milking operation which comprises a fastening device for fixing the retaining device at a predetermined milking position. The retaining device holds each of a multiple number of teat cups in a fixed position relative to the others during a first operational phase and allows manual access to each of the retained teat cups in such a way that, during a second operational phase, each teat cup is manually movable relative to the retaining device and at least one additional teat cup in more than one direction. A stimulation mechanism is provided that acts mechanically on at least one milk hose that connects a teat cup to the retaining device during the second operational phase for inciting a rhythmic movement to the teat cup while it is attached to a cow's teat.

The present invention provides a retaining device having a fastening device which fixes the retaining device in place at a predetermined milking position, allows the movement of a teat cup cluster at the udder in a more efficient manner to structure the milking process in a manner closer to a natural one, avoids uncontrolled movement of flexible connection hoses that connect the teat cup to a milk line where a milk collection container is provided, is capable of providing stimulation to the teat of a cow in order to enhance the milking operation and can be formed such that the risk of the milk hoses coming into contact with the ground is eliminated. The features and structure of the present invention are not shown by the references cited by the Examiner.

REJECTION OF CLAIMS 80-82, 90-94, 98-112 AND 124-130  
UNDER 35 USC 103(a) AS BEING UNPATENTABLE OVER  
VAN DER LINGEN ET AL IN VIEW OF MAIER, JR.

Van der Lingen et al discloses an apparatus for milking livestock which comprises a milking box, a milking robot disposed close to or in the milking box and a holder for receiving therein teat cups which, during use, are arranged on an animal for milking by the milking robot. The milking cups are held in a rest position in a substantially horizontal direction and are connected with the milking device and the vacuum suction means by very long milking hoses. Instead of the conventional collecting piece located near and underneath the udder of the animal to be milked and connected to the four milking cups by relatively short milking hoses, Van der Lingen discloses a robot for an automatic operation which comprises a gripper arm for attaching the milking cups to the teats of the cow. Although the gripper arm is not specifically described in this reference, it can be seen from Figure 1 in this reference that the arm has a special tong-like gripper which is suitably formed and designed to particularly grip the milking cup. However, there is no disclosure in this reference regarding a stimulation mechanism in that the robotic arm shown in Figure 1 does not use a rhythmic movement.

The robotic arm of Van der Lingen is not used to provide any mechanical stimulation action nor is suited to provide any mechanical stimulation by acting mechanically on at least one milk hose, or one control hose, that connects a teat cup to the retaining device during the operational phase of the milking device. The robotic arm of Van der Lingen et al is only used to attach the milking cups to the teats of the animal to be milked. In contrast thereto, the claims under appeal require that the stimulation device be capable of inciting a rhythmic movement to the teat cup while it is maintained in contact with the cow's teat. The robotic arm of Van der Lingen et al cannot perform this function. Therefore,

the secondary references cited by the Examiner must provide the motivation to one of ordinary skill in the art to modify Van der Lingen et al in a manner that would yield the presently claimed invention. It is respectfully submitted that the secondary references contain no such disclosure.

Maier, Jr. et al is directed to a stimulation device for an automatic milking device comprising a plurality of teat cups, a vacuum device for generating a negative pressure required for milking and a stimulation device which can be controlled. In Maier, separate control hoses or elements on the teat cup transmit the vibration for mechanical stimulation. In contrast thereto, the present invention requires that the teat cups are stimulated via mechanical motion transmitted through the hoses and not the vibrations being transferred to the hoses by the milk cup. According to Maier, Jr., it is advantageous to provide stimulation to an animal to be milked during the milking operation in order to allow the milking process to be more gentle and more similar with the animal's natural biological behavior. As such, a mere mechanical oscillation is generated which acts, in particular, via additional milking lines onto the milking cups. Therefore, according to the described embodiments of this reference, the milk collection piece has an independently controllable valve element which is connected with additional control hoses which change their length in accordance with pressure changes in order to get horizontal displacement of the milking cups. However, the teachings of Maier, Jr. are not properly transferred to Van der Lingen et al as suggested by the Examiner.

In Van der Lingen et al, there is no conventional milk collection piece, which is an essential precondition in the stimulation device of Maier in order to generate an oscillation of the milking cups by the additional connecting hoses. Van der Lingen et al uses a completely new concept for retaining and attaching the milking cups, that is, the separate individual retention of the milking cups at a

distance away from the animal to be milked, in a horizontal position and in a separate stocking element. A common collecting piece, which provides a connection of the four milking cups via short milk hoses and which is conventionally used in a milking set and attached during the milking operation closely below the udder of the cow is not used in the device of Van der Lingen et al. As such, the stimulation mechanism shown in Maier, Jr. could not be implemented in a milking robot device according to Van der Lingen et al.

The use of a robot arm for attaching the milking cups to the teats of the animal is excluded in order to attempt the combination of the teachings of Maier, Jr. with the device of Van der Lingen et al. The robot arm is of a structural size and design which is completely unsuitable for generating mechanical oscillations. A mechanical oscillation is a mechanical process in which a system, the milking cups, is deflected out of its equilibrium position and is then allowed to return to its equilibrium position through a retentive force such as gravity. This process results in harmonic oscillation, normally damped harmonic oscillation, and should not be confused with the utterly different mechanically forced movement of an item which is constantly under the retaining force of the moving mechanism. Additionally, as Maier, Jr. states, the stimulation of the animal has to be in a gentle manner in accordance with the natural biological condition of the animal. The gripper of the milking robot used in Van der Lingen et al is particularly designed for gripping stable milking cups made from steel and clearly is not suitable for the excitation of gentle harmonic mechanical oscillations without causing injury or at least unpleasant feelings to the animal.

The gripper of Van der Lingen et al is clearly designed for gripping milking cups and not for stimulating the udder of an animal to be milked and cannot be used to implement the stimulation according to Maier, Jr. Moreover, the gripper arm of Van der Lingen et al cannot be used during the second

operational phase, i.e., during the milking process, since it is structurally and dimensionally unsuitable to provide the gentle oscillation required by Maier, Jr. As such, the combination of Van der Lingen et al and Maier, Jr. et al does not even present a showing of prima facie obviousness under 35 USC 103(a) with respect to Claims 80-82, 90-94, 98-112 and 124-130.

REJECTION OF CLAIMS 83-89, 95-97 AND 103  
UNDER 35 USC 103(a) AS BEING UNPATENTABLE OVER  
VAN DER LINGEN ET AL AND MAIER, JR.  
AND FURTHER IN VIEW OF NORDEGREN ET AL

Van der Lingen et al and Maier, Jr. are discussed above in the previous section and the arguments used there are incorporated at this point also. The Nordegren et al reference is directed to a milking machine system containing a flow rate sensing device, a timing device and a system control means for varying the character of the working and massage vacuums during the milking process, in response to the rate of milk flow and to time. This reference has been cited by the Examiner as making it obvious to one of ordinary skill in the art to supply the retaining device of Van der Lingen et al in combination with Maier, Jr. et al with the controllable vacuum mechanism of Nordegren et al to more efficiently control the pressure losses in the system if a teat cup becomes dislodged. However, even if properly combinable with the previously discussed references, this reference does not cure the basic defects contained in the primary Van der Lingen et al reference and the secondary Maier, Jr. et al reference. That is, there still is no motivation or teaching that would suggest to one of ordinary skill in the art to use the robotic milking arm of Van der Lingen et al, which is merely used to attach the milking cups to the teats of the animals to be milked, in a manner that would incite a rhythmic movement to the teat cup while it is maintained in contact with a cow's teat during the milking operation. As such, Nordegren et al

in combination with Maier, Jr. et al and Van der Lingen et al does not even present a showing of prima facie obviousness under 35 USC 103(a) with respect to the presently claimed invention.

CONCLUSION

For the reasons discussed above, it is respectfully submitted that the presently claimed invention clearly is patentably distinguishable over the prior art cited by the Examiner. The Board is respectfully requested to reverse the Examiner's rejections.

Respectfully submitted,

  
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Encl: Claims Appendix  
Evidence Appendix  
Related Proceedings Appendix  
Postal Card

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CLAIMS APPENDIX

80. A retaining device for the manual removal of teat cups with a fastening device for fixing the retaining device at a predetermined milking position, the retaining device being formed to hold each of a multiple number of teat cups in a fixed position relative to the others during a first operational phase, and to allow manual access to each of the retained teat cups in such a way that, during a second operational phase, each teat cup is manually movable relative to the retaining device and at least one additional teat cup in more than one direction, wherein the retaining device furthermore has a stimulation mechanism that is formed to act mechanically on at least one milk hose that connects a teat cup to the retaining device during the second operational phase, for inciting a rhythmic movement to the teat cup while it is maintained in contact with and attached to a cow's teat.

81. The retaining device according to Claim 80, wherein the retaining device has a container in which the teat cups are introduced at least partially during the first operational phase.

82. The retaining device according to Claim 80, which furthermore comprises a guide device for guiding milk hoses during the movement of the teat cups relative to the retaining device.

83. The retaining device according to Claim 80, which furthermore comprises a controllable vacuum switching mechanism that is formed to apply an operating vacuum to each of the teat cups in a controllable manner.

84. The retaining device according to Claim 83, wherein the vacuum switching mechanism has a control switch for each of the teat cups.

85. The retaining device according to Claim 83, wherein the vacuum switching mechanism has an operating mechanism that switches the operating vacuum depending on the distance of the teat cup from the retaining device.

86. The retaining device according to Claim 83, wherein the vacuum switching mechanism comprises a turn-off device that is formed to decouple a teat cup from the operating vacuum individually and automatically in the case of a loss of the milking vacuum in that teat cup.

87. The retaining device according to Claim 80, which furthermore has several connectors that make possible a connection to one or more milk hoses that connect the retaining device to a milking installation and to a vacuum line of the milking installation.

88. The retaining device according to Claim 87, which furthermore has hose sections, wherein one end of each hose section is connected to a connector and wherein the other end of each hose section can be connected to a teat cup.

89. The retaining device according to Claim 88, wherein each hose section has at least one control hose section, which can be connected on one end to a teat cup and on the other end to a corresponding control connector.

90. The retaining device according to Claim 80, wherein the fastening device is attached to a milking parlour support.

91. The retaining device according to Claim 80, wherein the fastening device can be adjusted in such a way that the longitudinal axes of the milking cups are arranged virtually horizontally.

92. The retaining device according to Claim 80, wherein the fastening device is formed in such a way that the retaining device can be moved from a first position, which corresponds to the first operational phase, into at least a second position for cleaning at least an area of the teat cups.

93. The retaining device according to 80, wherein at least an area of the retaining device is manufactured of plastic, said area holding the teat cups.

94. The retaining device according to Claim 80, which furthermore has one or more cleaning connectors.

95. The retaining device according to Claim 87, wherein at least one connector is provided with a controllable valve.

96. The retaining device according to Claim 95, wherein the controllable valve can switch the vacuum to one of the teat cups.

97. The retaining device according to Claim 95, wherein the controllable valve can be operated electrically.

98. The retaining device according to Claim 80, which furthermore has a cleaning device that can be moved from a first cleaning position in the first operational phase, in which the head piece of the teat cup liner can be exposed to the action of a cleaning fluid, into a second position for releasing the teat cups for the second operational phase.

99. The retaining device according to Claim 98, wherein the cleaning device is provided with a sealing element for sealing the teat cup liner interior in the cleaning position.

100. The retaining device according to Claim 99, wherein the sealing element has at least one nozzle element for the influx of a cleaning fluid into the teat cup liner interior.

101. The retaining device according to Claim 80, which furthermore has a power supply unit.

102. The retaining device according to Claim 101, wherein the power supply unit is pneumatically driven.

103. The retaining device according to Claim 80, which furthermore has a sensor element that is formed to register the milk flow at least from one teat cup.

104. The retaining device according to Claim 80, which furthermore comprises a quality sensor element that is formed to register at least one characteristic identifying the milk quality.

105. The retaining device according to Claim 80, wherein the stimulation mechanism has a drive element and an actuator element coupled thereto, wherein the actuator element is in contact with the minimum of one milk hose and/or control hose during the milking.

106. The retaining device according to Claim 80, wherein the stimulation mechanism comprises a control mechanism that is formed to control the frequency of the mechanical action and/or the strength of the mechanical action.

107. The retaining device according to Claim 80, which furthermore has a holding area in each case for holding a teat cup, wherein each holding area comprises a fixative device that is formed to establish the orientation of the teat cup that is manually introduced into the holding area to a pre-defined orientation.

108. The retaining device according to Claim 80, wherein hose sections are provided for connection to the teat cups, said hose sections having at least one profiled area and a corresponding guide section for guiding the profiled area.

109. The retaining device according to Claim 108, wherein the hose section has a milk hose and at least one control hose that are connected in such a way as to define the profile of the profiled area.

110. The retaining device according to Claim 80, which furthermore has a device for pulling hose sections coupled to the teat cups into a position for post-milking during the second operational phase.

111. A teat cup cluster with a multiple number of teat cups, a multiple number of connection hoses that are connected to the teat cups and a retaining device according to Claim 80.

112. The teat cup cluster according to Claim 111, wherein the connection hoses have a milk-conducting line, a control line and/or a stimulation line.

124. A milking parlour with a support for holding and guiding a milk line and a control line, a multiple number of teat cups that are connected to the milk line and the control line in a fluid connection and a retaining device according to Claim 80.

125. A milking parlour according to Claim 124, wherein the retaining device is mounted on the support by means of the fastening device.

126. A milking parlour according to Claim 125, wherein the retaining device is mounted on the support in such a way

that it can pivot, so that the retaining device can be pivoted at least into the milking position and a cleaning position.

127. A milking parlour according to Claim 126, wherein the retaining device can be pivoted into a disinfection position for intermediate disinfection of the teat cups.

128. A milking parlour according to Claim 127, which furthermore has a container for performing an intermediate disinfection in the disinfection position.

129. A milking parlour according to Claim 128, wherein the container has a device for disinfection of an outer area of the teat cup.

130. A milking parlour according to Claim 124, which furthermore comprises a hose guide mounted on the support, wherein the hose guide is formed to produce the fluid connection between the teat cups and the milk line in the first and second operational phases.

EVIDENCE APPENDIX

There is no extrinsic evidence being relied on in the Appeal Brief.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings to the present application.